

# Massachusetts General Hospital

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September 28, 1956

Dr. Joshua Lederburg  
Department of Genetics  
University of Wisconsin  
Madison, Wisconsin

Dear Joshua

Thank you for showing me around your laboratory during my visit in Madison and for showing me some of the work that is going on there.


The observations on the ~~recovered~~ proteus 52 strain have occasioned us to reexamine this organism in some detail. It is evident that this is a penicillin ~~resistant~~ <sup>resistant</sup> variant that is capable of reproducing in the presence of penicillin, either as a bacterium or as an L form. Up to the present time, we have not devised a method which permits ~~examination~~ <sup>isolation</sup> of the L form in pure culture. This strain is somewhat deceptive in many respects since the bacterial forms regularly swell to large bodies toward the end of the growth phase and we are in the process of reassessing the experiment, quantitating the production of L forms by this strain. It may well be that our original ~~estimate~~ <sup>estimate</sup> of one L colony for each two to three bacteria, is in gross error.

Although we have not done slide cultures on similar organisms, we have followed with block ~~preparations~~ <sup>preparations</sup> at approximately hourly intervals, the development of this strain on penicillin plates and the enclosed diagram ~~and~~ <sup>indicated by</sup> observations gained so far. Even though these observations are somewhat limited, it is evident that bacterial forms are present during the active growth of this strain. I have also inoculated this strain into penicillin broth and observed a single field through 24 hours growth under the phase microscope and these observations are also diagrammed. It is apparent that the strain, under these conditions, reproduces in a manner similar to a few of the coli and Bacteroides strain reported a number of years ago by Dr. Dienes. It is also clear that this mode of reproduction is distinct from both the usual bacterial reproduction and the reproduction as it occurs in the L form.

I am hoping to persuade Dr. Dienes to write and discuss with you, some of the implications of these observations. I must confess that not having worked with these strains before, that I am not as yet entirely clear as to the implications. I will be interested in your observations on the coli and if you have made a slide culture preparation of the proteus, I would be interested in those observations, also.

Give my regards to your wife.

Sincerely

  
John Sharp, M.D.

JS/pf

P.S. Dr. Dienes has written.